

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. The following listing provides the amended claims with the amendments marked with deleted material crossed out and new material underlined to show the changes made.

Claims 1-9. (Canceled)

10. (New) A method for maintaining a trajectory of a first tracked instrument toward a target site in a human patient, as the first tracked instrument is moved in space toward the target in the patient, the method comprising:

(a) using a second image capture instrument to construct an image of the target site that is defined by reference to an image-coordinate system;

(b) correlating the image coordinate system with an instrument coordinate system to place the target-site coordinate in the instrument coordinate system;

(c) determining whether the target site has moved off the first tracked instrument's trajectory towards the target site;

(d) after determining that the target site has moved off the first tracked instrument's trajectory towards the target site, computing a correction to the orientation of the first tracked instrument to re-orient the first tracked instrument towards the target site; and

(e) using the computed correction to correct the orientation of the first tracked instrument to maintain the first tracked instrument's defined trajectory towards the target site even as the first tracked instrument is moved in space.

11. (New) The method of claim 10, wherein the movement of the target site is initiated by the patient.

12. (New) The method of claim 10, wherein the movement of the target site is only initiated by the patient.

13. (New) The method of claim 10, wherein the first tracked instrument applies a constant pressure upon the tissue surface of the patient's body while maintaining the trajectory toward the target.

14. (New) A processor-readable medium comprising a program of instructions for execution by a processor to perform a method of maintaining a trajectory of a first tracked instrument toward a target site in a human patient, as the first tracked instrument is moved in space, the program of instructions comprising instructions for:

- (a) using a second image capture instrument to construct an image of the target site that is defined by reference to an image-coordinate system;

- (b) correlating the image coordinate system with an instrument coordinate system to place the target-site coordinate in the instrument coordinate system;

- (c) determining whether the target site has moved off the first tracked instrument's trajectory towards the target site;

- (d) after determining that the target site has moved off the first tracked instrument's trajectory towards the target site, computing a correction to the orientation of the first tracked instrument to re-orient the first tracked instrument towards the target site; and

- (e) using the computed correction to correct the orientation of the first tracked instrument to maintain the first tracked instrument's defined trajectory towards the target site even as the first tracked instrument is moved in space.

15. (New) The processor readable medium of claim 14, wherein the movement of the target site is initiated by the patient.

16. (New) The processor readable medium of claim 14, wherein the movement of the target site is only initiated by the patient.

17. (New) The processor readable medium of claim 14, wherein the first tracked instrument applies a constant pressure upon the tissue surface of the patient's body while maintaining the trajectory toward the target.

18. (New) A device for maintaining a trajectory between a tip of a first tracked instrument and a target site in a patient's body, the device comprising:

(a) an articulated mechanical arm having or accommodating a distal-end first tracked instrument having a tip that has or accommodates a force contact sensor;

(b) an actuator operatively connected to the mechanical arm for adjusting the orientation of the mechanical arm, so as to maintain the trajectory between the tip of the first tracked instrument in the direction of the patient target site;

(c) a tracking mechanism for tracking the orientation of the first tracked instrument in an instrument coordinate system; and

(d) a processor operatively connected to the actuator and tracking mechanism for:

(d1) using a second image capture instrument to construct an image of the target site that is defined by reference to the image-coordinate system;

(d2) correlating the image coordinate system with an instrument coordinate system to place the target-site coordinate in the instrument coordinate system;

(d3) determining whether the target site has moved off the first tracked instrument's trajectory towards the target site;

(d4) after determining that the target site has moved off the first tracked instrument's trajectory towards the target site, computing a correction to the orientation of the first tracked instrument to re-orient the first tracked instrument towards the target site; and

(d5) using the computed correction to correct the orientation of the first tracked instrument to maintain the first tracked instrument's defined trajectory toward the target site even as the first tracked instrument is moved in space outside or inside the body.

19. (New) The device of claim 18, wherein the first tracked instrument applies a constant pressure upon the tissue surface of the patient's body while maintaining the trajectory toward the target.

20. (New) The device of claim 18, wherein the movement of the target site is initiated by the patient.

21. (New) The device of claim 18, wherein the movement of the target site is only initiated by the patient.